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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/576,976

07/17/2006

Takayuki Takahagi

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EXAMINER

PARVINI, PEGAH

ART UNIT

PAPER NUMBER

1731

NOTIFICATION DATE

DELIVERY MODE

09/26/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/576,976	<b>Applicant(s)</b> TAKAHAGI ET AL.	
	<b>Examiner</b> PEGAH PARVINI	<b>Art Unit</b> 1731	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 5) ☒ Claim(s) 1,3,7,8 and 14-19 is/are pending in the application.
- 5a) Of the above claim(s) 7 and 8 is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 1,3 and 14-17 is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 24 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/4/2010 has been entered.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

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F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

**Claims 1, 3 and 14-17** are provisionally rejected on the ground of nonstatutory double patenting over claims 1-7 of copending Application No. 12/458,634. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: A liquid composition which is used in making a dielectric film having fine particles of diamond purified and oxidized by heating and a purifying agent, a dispersion medium such as water, a water soluble dispersant or a mixture thereof, and an amine having a boiling point of 50°C to 300°C.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 3 and 14-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2004/0040217 to Takashina et al. in view of U.S. Patent No. 5,690,539 to Swidler et al. in view of "Safety data for pyridine" in view of U.S. Patent No. 6,337,060 to Hiraki et al.

Regarding claim 1, Takashina et al. disclose a composition comprising abrasive particles such as diamond having a size of 2-200 nm (i.e. fine particles), water-soluble organic amines, and an aqueous medium (Abstract; [0035], [0038], [0051]) wherein said composition is also used in making films ([0061]). However, it is to be noted that "A dielectric film forming liquid composition" is a statement in the preamble, and statements in the preamble reciting the purpose or intended use of the claimed

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invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference between the claimed invention and the prior art. (See MPEP 2111.02). Moreover, ultimate utility does not make a composition patentable. See *In re Pearson*, 181 USPQ 641.

Takashina et al., although disclosing the use of water-soluble organic amine, do not expressly and/or literally disclose a boiling point of 50°C to 300°C for their amine.

Nevertheless, it would have been obvious at the time the invention was made to have modified Takashina et al. to disclose a boiling point within the claimed range or a specific amine which would have overlapping range of boiling point with the claimed range motivated by the fact that the disclosure of Takashina et al. on the use of water-soluble organic amine reads on any and all water-soluble organic amines which are used for the purpose of pH adjustment in Takashina et al. as noted in paragraph [0051], and thus, it would include any and all amine such as pyridine which is known to have a boiling point of about 115°C as that shown by “Safety data for pyridine” further motivated by the fact that Swidler et al. make it clear that water soluble organic amines such as pyridine is among the well known pH adjuster to those skilled in the art in the abrasive compositions (Swidler et al. column 2, lines 46-55). Therefore, it would have been well within the scope of a skilled artisan to have modified Takashina et al. in order to specifically use a water-soluble organic amine which would have a boiling point, at least overlapping, with the claimed boiling point motivated by the fact that the disclosure of Takashina et al. on the use of water-soluble organic amines reads on any and all organic amines, and further motivated by the fact that Swidler et al. disclose the use of

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water-soluble organic amines such as pyridine as a known fact in the art; this is considering the fact that Takashina et al. uses water-soluble organic amines as a pH adjuster.

The combination of Takashina et al. in view of Swidler et al. and in view of "Safety data for pyridine" does not expressly and/or literally disclose "purified and oxidized" diamond particles even though Takashina et al. disclose the use of diamond particles.

However, purifying and oxidizing diamond particles by treating them with solutions such as sulfuric acid or nitric acid and then heat treating them is known to one of skilled in the art at the time the invention was made with the intention of obtaining diamond particles which are functionalized, oxidized, and have lost at least less than one tenth of their impurities as that disclosed by Hiraki et al. (column 3, lines 32-41; column 4, line 65 to column 5, line 10; column 5, lines 45-55). This is done with the intention of obtaining stable, uniform suspension or dispersion in a common medium such as water containing diamond (Hiraki et al., Abstract). It should be noted that both Takashina et al. and the instant application under examination has a dispersant or medium in which diamond particles are dispersed. Thus, it is well within the scope of a skilled artisan to have modified Takashina et al. in view of Swidler et al. in view of "Safety data for pyridine" with the teaching of Hiraki et al. in order to modify the diamond particle to have them purified and oxidized.

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Regarding claim 3, as noted above, the combination of references, in particular, Takashina et al. discloses an aqueous medium.

Regarding claim 14, as detailed out above, Hiraki et al. discloses purifying diamond particles with nitric acid.

Regarding claim 15, as detailed out above, the amine substance is pyridine.

Regarding claim 16, although the combination of references cited above may not expressly disclose the extend of purity of the diamond particles, said combination discloses all the claimed components including fine diamond particles which have been purified and oxidized using concentrated acids with specific recitation drawn to the advantage of purifying and oxidizing diamond fine particles to an extent that they lose at least less than one tenth of their impurities. Therefore, the claimed purity level of fine diamond particles is expected to follow from the purified and oxidized diamond particles of the combination of references absence clear and specific evidence showing the contrary.

Regarding claim 17, Takashina et al. disclose a particle size of 2-200nm for 100% by volume of the particles ([0038]). Since said reference does not, by itself, teach the purifying and oxidizing the diamond particles, not until Hiraki et al. was utilized, the



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diamond particles of Takashina et al. are taken to be raw diamond (i.e. not treated to be purified and oxidized).

Nevertheless, in the alternative, the use of finer particles of diamond is preferable especially in view of the fact that Hiraki et al. clearly disclose that an appreciable increase in suspension stability is obtained with fine particles having a size of less than 1 micron and a longer suspension holding time is obtained with fine particles of the size of 200nm or less (column 3, lines 1-13). Therefore, it would have been obvious to a person of ordinary skill in the art to have utilized finer diamond particles as motivated above.

With reference to overlapping ranges, it is to be noted that overlapping ranges have been held to establish *prima facie* obviousness. MPEP 2144.05.

**Claims 18-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Takashina et al. in view of Swidler et al. in view of "Safety data for pyridine" in view of Hiraki et al. as applied to claims 1 and 15 above, and further in view of U.S. Patent No. 6,143,794 to Chaudhuri et al.

The combination of references as applied to claims 1 and 15 discloses a composition comprising the claimed component as detailed out above.

Takashina et al. clearly disclose the use of water soluble organic amine compounds for pH adjustment; although said reference or the combination of references does not expressly and/or literally disclose that said water soluble organic amine compound may be one such as diethanolamine, it would have been obvious to consider

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diethanolamine as one of the suitable amines being used to adjust the pH, and it would have been obvious to a person of ordinary skill in the art to modify the combination of references to have used diethanolamine for that purpose motivated by the fact that diethanolamine is functionally equivalent with amines such as pyridine or triethanolamine, in at least, changing/adjusting the pH as that shown by Chaudhuri et al. (column 8, lines 30-37) which clearly disclose the use of amine bases such as triethanolamine, diethanolamine and other basic compound for pH adjustment. It should be noted that not only Takashina et al. clearly disclose the use of water soluble organic amine, but that Swidler et al. clearly show that amines such as pyridine, triethanolamine, and sodium hydroxide (all considered to be water soluble) are well known in the art to be used as pH adjuster (Swidler et al. column 2, lines 45-55). Considering these facts and based on the teachings of Chaudhuri et al. on showing diethanolamine, triethanolamine, sodium hydroxide as well as other basic compounds used for pH adjustment, it is well within the scope of one of ordinary skilled in the art to have used a water soluble amine such as diethanolamine in the place of “water soluble organic amines” of Takashina et al. or the specific one taught by the combination of Takashina et al. in view of Swidler et al. in view of “Safety data for pyridine” to obtain the invention as claimed.

With reference to boiling point, it should be noted that diethanolamine is known to have a boiling point within the claimed range as that has been clearly evidenced from its MSDS sheet.

***Response to Arguments***

Applicants' arguments filed 10/4/2010 have been fully considered but they are not persuasive.

The breath of the instant claims is so broad that are encompassed by the prior art such as one presented above; whatever is the main part of the invention is not inserted/amended into the instant claims. Applicants are encouraged to amend the claims with it according to the specification and examples.

Applicants have mentioned that the Patent Office suggested a Rule 132 Declaration to establish that Takashina is not capable of forming a dielectric film, and thus, applicants have taken the suggestion of the Office.

However, as pointed out in the interview summary mailed out on 8/19/2010, the Office had mentioned that "a declaration having sufficient evidence proving that the prior art composition is not capable of forming into a film such as ones disclosed by instant invention might be a good approach". The prior art was a combination of references, not just the primary reference. Applicants, as demonstrated in the declaration filed 10/24/2010, have chosen to modify Takashina "in order to prepare a composition with components more in line with the present application" as stated at the bottom of page 3 to the first top line of page 4 of the declaration. However, applicants have done some specific modifications, but did not do any other modifications which were based on modifying Takashina et al. with the secondary references of the prior art as had been

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presented in the previous Office action and repeated above. For example, applicants chose to replace the particles of the specific example of Takashina et al. with crude diamond particles, but they did not replace them with purified and oxidized diamond particles as that taught by Hiraki et al. in modifying Takashina et al. especially considering the fact that the rejection was based on a combination of references. The same is true for components.

Nevertheless, it is not clear as to how applicants intend to show that the prior art is not capable of achieving instant claims because the primary reference, Takashina et al., clearly states in paragraph [0061] that their composition is suitable for forming a film, and as the combination of references show, the prior art makes the instant claims obvious. Furthermore, the claim as recited is drawn to a composition, and this composition is made obvious by the combination of references. The recitation drawn to a dielectric film is in the preamble; ultimate utility does not make a composition patentable. See *In re Pearson*, 181 USPQ 641.

Again, as suggested to applicants in the interview summary mailed out on 10/14/2010 and pointed out above, applicants are encouraged to amend the claims with what the instant invention is about especially since the claims as recited are broad.

Applicants have argued that the claimed composition forms a uniform dielectric film, but Takashina et al. do not disclose such.

The examiner, respectfully, submits that the instant claims have been rejected over a combination of references not over one reference alone. Additionally, the term

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“uniform” is not recited in the claim language. In addition, irrespective of what the material is used for, the composition is the same; the combination of references makes the instant claims obvious. Thus, no distinction is seen to exist.

Furthermore, it should be noted that statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference between the claimed invention and the prior art. (See MPEP 2111.02).

With reference to applicants’ argument drawn to the use of Hiraki et al. and combining it with Takashina et al., it is to be noted Hiraki et al. clearly disclose the intention of removing impurities from diamond particles and that is why said reference disclose the treatment of diamond with sulfuric acid. As seen in the above rejection, proper motivation has been used to combine the two references. As noted above, the motivation is to obtain diamond particles which are functionalized and oxidized and also, lost at least less than one tenth of their impurities.

With reference to applicants’ argument drawn to Swidler and Pyridine Safety Data, there were used to address the amine used in the claimed composition and to point out to its boiling point as detailed out above.

Although applicants have attempted to prove qualities of their composition over the prior art (which is not found persuasive as detailed out above), their claims,

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especially claim 1 is broad in that it does not specify the amine, the dispersant, their content or size of diamond particles even though the examples of the present application, which applicants have relied and point out in their declaration as well, are based on a specific composition with specified amine, dispersant, amount and size.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PEGAH PARVINI whose telephone number is (571)272-2639. The examiner can normally be reached on Monday to Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Pegah Parvini/

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